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Abstract

The purpose of this research was to examine the effect of project cost control on the performance of rice project in Rwanda by taking Bugarama Rice Project. The descriptive case study research based on qualitative and quantitative approaches were used in order to get a better insight of the study. The population of the study was 74 and sample of 57 respondents, sampling technique used pick all the 57 respondents as the sample size of the population. The researcher used SPSS software application in order to process the data. Mean standard deviation and percentages were used for data analysis. The relationship between the variables was established by use of Pearson correlations. The results showed that that majority of the respondents agreed that a project develop accurate cost estimates and realistic project budget that leads to project to minimum cost while minority disagree with the statement. For instance, from the ANOVA results showed that p-value is 0.000 which is less than the 0.05, set as standard significance levels. This means that null hypothesis stated that there is no relationship between keeping a track of project costs and project performance in Bugarama Rice Project, was rejected and goes by the alternative hypothesis, which states that the independent variable influences project performance in Bugarama Rice Project. The results also showed that that majority of the respondents agreed that labor cost of the project is a challenge to project cost control hence poor performance and majority of respondents disagree with statement. This implied that there was a challenge for labor cost in the project. The ANOVA results showed a p-value is 0.000, which is less than the 0.05, set as standard significance levels. This signified that reject null hypothesis and accept the alternative hypothesis. Therefore, there was statistical significant relationship between planning the project budget for project and project performance thus planning the project budget in Bugarama Rice Project was done by top management has an influence on project performance. The research results showed that majority of the respondents agreed that project manager ensure compliance with the budget for continually compare the actual expenses incurred with the predicted ones throughout the project's life cycle and minority of the respondents disagreed with statement. The ANOVA results show p-value is 0.000 which is less than the 0.05, set as standard significance levels with fit level of 444.340. This meant that null hypothesis states that there was no relationship between managing project expenses and project performance in Bugarama Rice Project was rejected and goes by the alternative

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hypothesis, which stated that the independent variable influences project performance in Bugarama Rice Project. Basing on the results the management should emphasize on cost of the project office results in relation to efficiency of project budget cost in the managing project in order to prevent future challenges. Management should have a provision of project financial reports during of project process that minimizes challenges of the project cost control during project completion.

Keywords: *Project Cost Control, Performance of Rice Project, Rwanda*

1. Introduction

Drury (2004) examined cost control in project as a broad set of cost accounting methods and management techniques with the common goal of improving projects cost-efficiency by reducing costs, or at least restricting their rate of growth. Project cost control is used in projects to monitor, evaluate and the most important to increase the efficiency of specific areas within their operations. Brigham (2011) assessed the main purpose in cost controlling for an agriculture project should be active controlling of final costs for owner, and not just to record and registering the payment. Project cost control must be prepared for efficient cost control. According to MINECOFIN project report (2016), in Rwanda, out of 1711 projects implemented in Rwanda, 35% of project not delivering when it was expected (schedule), 65% of projects not delivering it at the cost expected (budget), 45 of projects not bringing all the functionality that are expected (scope), 22% of projects did not continue after withdraw of projects funder and 55% of projects not delivering the functionality with the expected quality'' at least contributes to a fair perception of project failure (New times, March 09, 2020).

Therefore, projects in Rwanda have poor cost control that leads failure to some projects hence high project cost is based on the not keeping a track of project costs, poor planning budgets and over estimated cost. Therefore, this has hindered and failure project costs in the future and to estimate or re-estimate the cost of the work yet to be completed. Basically some agriculture projects are not practicing project cost control in Rwanda. Amount of detail and the time interval between project cost controls are not considered and the time interval is not varied depends on the level of management for which they prepared the Reports for, (James, 2016). Under a joint financial support of the World Bank and the government of Rwanda, World Bank to inject \$300m in agriculture sector to solve the problem of agriculture in the country and particularly rural areas (New Times E-paper, August 16, 2021). It was against this backdrop that this study though to examine the effect of project cost control on performance of rice projects in Rwanda with reference of Bugarama Rice Project.

1.1 Objectives of the study

1.1.1 General objective

The general objective of this study examined the effect of project cost control on performance of rice projects in Rwanda.

1.1.2 Specific Objectives

- i. To examine the effect of keeping a track of project costs on project performance in Bugarama Rice Project
- ii. To evaluate the planning project budget on project performance in Bugarama Rice Project.
- iii. To assess the managing project expenses on project performance in Bugarama Rice Project.

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1.1.3 Research Hypotheses

Ho1: There is no relationship between keeping a track of project costs and project performance in Bugarama Rice Project.

Ho2: There is no relationship between planning project budget and project performance in Bugarama Rice Project

Ho3: There is no relationship between managing project expenses and project performance in Bugarama Rice Project.

2.1 Empirical Literature Review

2.1.1 Keeping a Track of Project Costs on Project Performance

Curwin, *et al.* (2012) studied the relationship between internal cost control and performance of project in Uganda. The general objective of the study was to examine the influence of internal cost control on performance project in Mbarara district, Water Project. The specific objectives of the study were to examine the influence of internal cost control on performance of project in Mbarara district. The primary data was collected by using questionnaire. Qualitative data was analyzed using SPSS 23 and Microsoft excel and presented in line with the study themes.

The findings of the study on anticipated to have project performance has positive impact on district economy and country as well. The study was able to obtain 87% response rate. The study of the correlation analysis indicated there was strong positive effect of internal cost control in the identification and planning overtime on project employee's while the regression results indicated there was a statistically significant positive of internal cost control on the project performance. The study used only qualitative data; this implies that, there is gap in methodology regarding to quantitative data. Hence, there is also the gap in contextual because the study dealt with both quantitative and qualitative data, and also the gap in context because the study did not mention how each variable of tracking of project costs contributes to the project performance (Gao, 2009).

Kirianki (2013) did a study on an assessment of school cost control on sustainability of School Feeding Programme in Primary Schools: A Case of Kirimajoro district, Kenya. The general objective of this study was to assess effective cost control on sustainability of school feeding programme in Kenya after WFP exit. It explored the challenges of cost of teachers. A descriptive study design was used to collect quantitative and qualitative data adopted deliberate sampling technique. The findings revealed that at least 74.12% of the respondents feel that there is consultation in the design meaning that there is a bit of cost management of teacher's involvement necessary for sustainability and over 75.18% agree that there is cost management in place that which is also key to sustainability of school feeding programme. However, this finding does not consider other factors such as school cost control of teachers in school feeding how affects the sustainability of the study. Thus, it appears inconclusive to claim that the difference in enrollment between treatment and control groups was the result of the program without considering unobservable factors.

Ashworth (2014) studied on the influence of internal control on employees' performance in the public institutions in Gululli division, Masaka district, Uganda. The objectives of this study focused on finding out the influence of the efficiency cost management on employee performance in Gululli division. The study adopted descriptive survey design where four private institutions were selected through simple random technique. The fifth public institutions were purposively sampled. Findings showed that that the level of efficiency cost management of employees' performance in public institutions in Gululli division. Findings

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showed that employees perform most when there is efficiency cost management and their work is appreciated.

Purposive sampling was used to select the 5 institutions of the sampled public institutions. The total sample comprised of 142 respondents. Simple random sampling was used to select 35 administrators and 107 workers. The instruments for data collection were questionnaires, interview schedules. Observation schedule was used by the researcher for assessing conditions of the resources for cost management. There was gap in conceptual because Ashworth (2014) did not mentioned how cost management contribution towards employees' performance of public institutions. Hence, this study fills the gap by assessing the influence of how cost management affect performance of employees in Gululli division (Marilla & Svinicki, 2010).

2.1.2 Planning the Project Budget on Project Performance

The study was conducted in Hussin (2011), the literature was reviewed in the light of study variables on the role of cost control on development program performance. Descriptive survey design was used to establish relationships between independent and dependent variables. The sample size was 49 program management committee members and 160 community members in Tabora, Mwiru, Tanzania, benefitting from the program selected using purposive and systemic random sampling method. A semi structured questionnaires were used for data collection. The findings from the study indicated that communities have not fully participated in program cycle especially in monitoring and evaluation, training, resource contribution and decision making. However, this is due to limited economic resource and failure for community not to fully understand their roles in program. The study established that project budget through program information sharing, resources contribution collective decision making, and program governance have contributed extensively towards development program performance. The recommended that physical and job settings, culture as well as competitive market and each of these is connected to project performance due to the quality of workplace environment this impact project budget level of increase of project performance.

Kohun (2017) studied the relationship between project planning and project performance of Donor Funded Youth Projects in Mbale district, Country in Uganda. The specific objectives of the study were to examine the influence of budget planning in the entire program cycle and project performance of donor funded youth projects in Mbale district. In his study he used both quantitative and qualitative to collect data and describes working environment as an atmosphere in the working area. The primary data was collected by using questionnaire. Qualitative data was analyzed using SPSS 23 and Microsoft excel and presented in line with the study themes.

The findings of the study are anticipated to budget planning and impact project performance. The study was able to obtain a 95% response rate. The study of the correlation analysis indicated there was strong positive effect of budget planning and project performance while the *p* value results indicated there was a statistically significant relationship between budget planning on the project performance. The study recommended that budget planning combines elements that allow projects to succeed in all aspect of budget.

Brigham (2001), carried a study on human environment and project performance of building industries in Chana. The specific objectives of the study were to assess the influence of good working environment and project performance in Chuich sector. The research study used descriptive research design in collecting the data from respondents. A sample of 766 respondents were selected using Tora Yammen Formula. The primary data was collected by

using questionnaire. Qualitative data was analyzed using SPSS 23 and Microsoft excel and presented in line with the study. Findings revealed that industrial good working environment combines technics and philosophies leads to project performance as well the industry to be built in time. The working environment of a workplace has a significant impact on project performance. Research recommended that essential elements that should be considered necessary for a pleasant environment at the workplace to improve project performance are safety, material things like light, ventilation, workspace, strategy manuals, consumable supplies and hardware instruments.

2.1.3 Managing Project Expenses on Project Performance

The study was conducted in Mahazril, *et al.* (2012), the literature was reviewed in the light of study on the impact of effective cost control on project performance in Zambia. The specific objectives of the study were to assess the influence of minimum project expenses on performance of project in Mukonokwa irrigation scheme project. Descriptive survey design was used to establish relationships between independent and dependent variables. The sample size was 38 project management committee members and 130 community members in Mukonokwa, Zambia, benefitting from the project selected using purposive and systemic random sampling method. A semi structured questionnaires were used for data collection. The findings from the study indicated that community have not fully benefited in project cycle especially in excessing water for farming. However, findings show due to limited economic resource and failure for some of community members not to fully understanding their benefits of the projects has made the project to delay. The study established that recognition excellent employee through project information sharing and collective decision making has contributed extensively towards project performance. The research recommended that more effective quality and practicality of educated employees had, the more contribution they will have to project performance.

In (2013), Harvey, studied the relationship between low salary expense and employees' performance of in Rusaka industries, Country in Zambia. The specific objectives of the study were to examine the relationship of par time pay and employees' performance of industries in Pachwa. In his study he used both quantitative and qualitative to collect data and describes working environment of par time pay atmosphere in the working area. The primary data was collected by using questionnaire. Qualitative data was analyzed using SPSS 22 and Microsoft excel in line with the research study. The research findings of the study are anticipated to par time pay of employee for work done and influence employees' performance. The study was results obtain 86% response rate on the statement disagreed. The study of the Pearson correlation coefficient analysis designated that there was strong negative correlation implying that par time pay has no influence on employees' performance in industrial sector while the *p* value results indicated there was a statistically significant no relationship between of par time pay on the employees' performance. The study recommended that par time pay method should be revised in order to that allow employees culture of being motivated to be fit at work place in all aspect.

A study carried by Daniel (2017) on project good working condition culture and project performance. The research study used descriptive research design in collecting the data from respondents. Study findings revealed that a project good working condition culture in a project can help employees to comply with their forecasted goals by helping accommodate and maintain positive spirit to perform well. Findings also showed that the importance of project good working condition culture for a long term targets for project performance. Recognition changes positively working environment, its increase performance and employee morale as well project performance, recognition decrease stress, absenteeism, and staff

turnover. Recognition is an indispensable factor that impact employee performance, knowing this could bring victory of the project. Research recommends that a project that applies a project good working condition culture the outcome is triple than the project which doesn't apply this program.

2.2 Critical Review and Research Gap Identification

The theoretical and the empirical literature demonstrate that, the existing literature on project cost control was not extensive in Africa and in Rwanda in particular. Most studies on project cost control were common in many developed countries such as Europe, America and Canada. This is explained by studies by "Ferguson (2011), Marshall & Steinbort (2000)." The reviewed literature did not reflect on project cost control and project performance in developed countries like Rwanda in agriculture sector and this create a gap in the research. It should also be noted no scholar has conducted a study on effect of project cost control and project performance in Rwanda specifically in agriculture sector hence there is need for the study by taking Bugarama Rice Project as the case study.

2.3 Conceptual Framework

Conceptual framework is an estimated show distinguishing the ideas under study and their connections, (Mugenda 2013). The applied system gives an auxiliary of the relationship between the factors shaping the ideas of the study on the usage of wellbeing contributor subsidized tasks. The free factors are gathered on the left side yet not in any request of significance. Conceptual framework shows the relationship between independent and dependent variables.

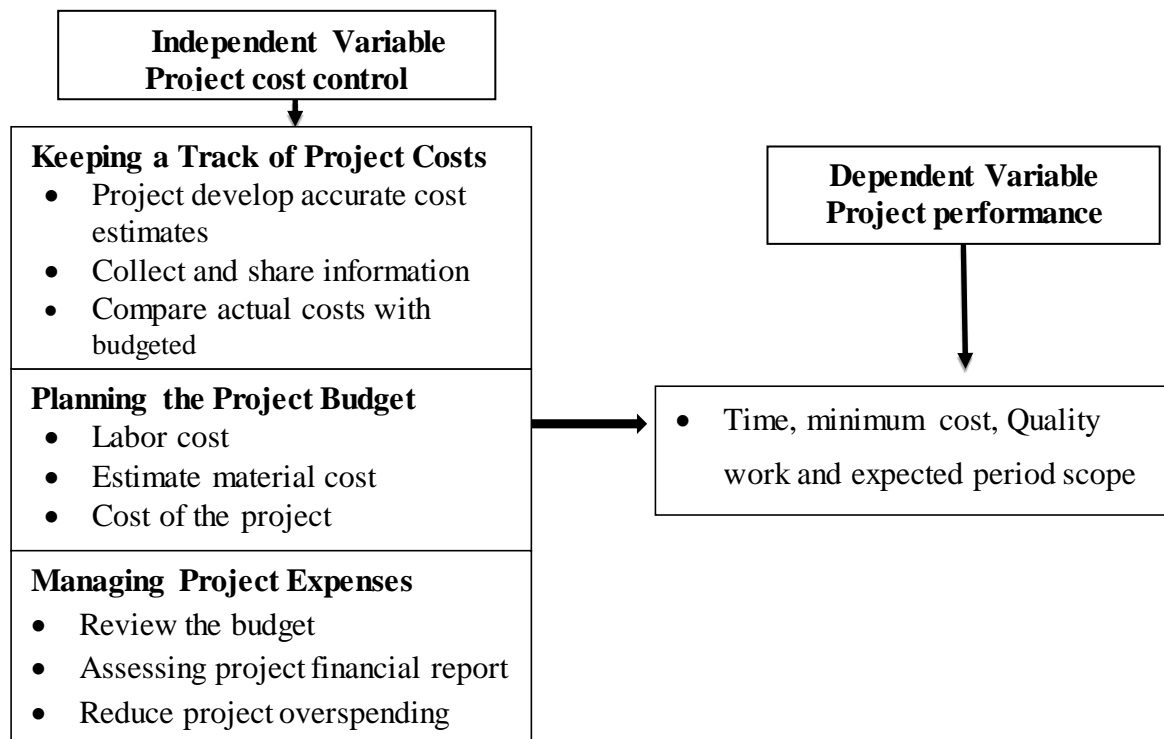


Figure 1: Conceptual Framework

Source: Researcher, 2022

Figure 1 From the above conceptual framework, it was clear that project cost control as an Independent variable (as measured by the keeping a track of project costs, planning the project and managing project expenses) affects project performance as dependent variable (as

measured by time and minimum cost and quality work and expected period scope). However, there also intervening factors like prices and weather.

3. Materials and Methods

The research design of the study was descriptive research method. In addition, both qualitative and quantitative methods were applied in data collection and analysis. The data was analyzed using both descriptive and inferential statistical methods. Pearson Correlation approach was used to assess relationship between the variables while Regression model used as a way of assessing the effect of project cost control on project performance. The descriptive design was found to be suitable because it addressed major objectives and research questions proposed in the study adequately (Madeyski 2014). For this case the total study population was 74 staffs of Bugarama Rice Project who was active participants of the projects both users and developers. The study employed stratified random sampling in which the respondents were stratified into categories of top management, project managers, technical team, procurement, accounts department and legal team, auditors and advisors. Since the population was too small, the researcher used sample size as population. The study was carried out using sampling methods to choose the required respondents from the top management, project managers, technical team, procurement, accounts department and legal team, auditors and advisors who managed the project budget and steps under taken.

In this research questionnaire and interviews were used for the collection of fresh data and the available documents were reviewed to get secondary data. Thus, this study was used the following data collection instruments. The study targeted top management of the project. The collected data was fed into computer programs (using particularly the statistical package for social scientist with the help of an expert) for easy analysis and interpretation of results. The data was analyzed using both descriptive and inferential statistical methods. Pearson Correlation approach was used to assess relationship between the variables while regression model was used as a way of assessing effect of project cost control on project performance. Statistical analysis was used to explain the qualitative results of the survey. The algebraic expression of the regression model took the following form. $Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e$

Where Y = Performance of Rice Project, α = Model Constant, β_1 = Model Coefficients, e = Error Term (unknown random error assumed as normally distributed), X_1 = Keeping a Track of Project Costs, X_2 = Planning Project Budget and X_3 = Managing Project Expenses.

4. Research Findings and discussion

4.1 Effect of keeping a track of project costs on project performance

This sub section is aiming to make out the reaction of respondents basing on first research objective of the study and then researcher presents the components that provide the factors that effect of keeping a track of project costs on project performance as follows:

Table 1: Descriptive statistics for keeping a track of project costs on project performance

Keeping a track of project costs	SA		A		D		SD		Mean	Std Dev.
	fi	%	fi	%	fi	%	fi	%		
Has a project develop accurate cost estimates and realistic project budget that leads to project to minimum cost	42	60	07	10	07	10	14	20	1.80000	1.105013
Establish a system to collect and share information has helped project manager in tracking unnecessary costs	20	28	28	40	08	12	14	20	2.1000	.96791
Does the project manager compare actual costs with budgeted estimates during project duration	11	16	06	08	17	24	36	52	2.8500	.98809
Bugarama Rice projects has cost control to achieve performance through tracking project costs	46	66	07	10	03	04	14	20	1.65000	.988087
Overall Mean									2.1000	1.01228

Source: Survey Data, September, (2022)

The results in Table 1 showed that that 70% of the respondents agreed that a project develop accurate cost estimates and realistic project budget that leads to project to minimum cost while 30% disagree with the statement. This implied that project budget leads the project to a minimum cost. 68% of the respondents agreed that establish a system to collect and share information has helped project manager in tracking unnecessary costs whereas 32% disagree with the statement. Research finding showed that 76% of the respondents disagreed that the project manager doesn't compare actual costs with budgeted estimates during project duration and 24% agree with the statement. This implies that manager doesn't make any comparison for comprehensive analysis. The survey showed that 76% of the respondents agreed that Bugarama Rice projects has cost control to achieve performance through tracking project costs while 24% as minority disagreed with the statement. Basing on the majority of the responses on the effect of keeping a track of project costs on project performance in the project. Only one question was disagreed, this implied that keeping a track of project costs leads to project performance in Bugarama Rice projects in Rwanda. According to survey from keeping a track of project costs has presented overall average of ($x = 2.1000$ and $Std\ Dev = 1.01228$) in stirring the project performance; this means there is reasonable mean and evidence of the existence of the fact and heterogeneity of responses.

This finding is in line with the finding by Stedry & Kay (2011), "The effects of goal difficulty on performance of project" in Lusaka Zambia, Behavioural Science. This would eventually

enhance the project performance as is brought out by this study. The researcher also conducted in-depth group interviews with Bugarama Rice projects management in regard to how keeping a track of project costs affected the project performance. The items of interview discussion focused on the keeping a track of project costs as the foregoing analysis shows.

Interviews with Bugarama Rice projects management revealed that project was conducted on keeping a track of project costs to identify the project strengths, weaknesses, opportunities and threats (SWOT). In discussion on this matter, one respondent said, “as Bugarama Rice projects, usually assess the internal and external factors that may affect the project costs in terms of project develop accurate cost estimates, collect and share information and compare actual costs with budgeted. Part of environmental scanning involves regular interactions with our stakeholders to identify any factors that pose an advantage or disadvantage to project costs operations. However, the external environmental is unpredictable, volatile and uncertain”. These findings are contradicted by the questionnaire survey item 4, which suggested that Bugarama Rice projects has cost control to achieve performance through tracking project costs that had a small effect on project performance. This indicates that after SWOT analysis, there is need for further management in project costs and engagement strategic actions to eliminate the threats. This demonstrates that project costs strategies are not a stand-alone solution but becomes effective when reinforced by further strategies.

4.2 Effect of Keeping a Track of Project Costs on Project Performance

Regression analysis investigates the relationship between a dependent (target) and independent variable(s) (predictor). This section testing research hypotheses and regression equation as follows.

$$Y_{pp} = \alpha + \beta_1 X_1 + \epsilon_1$$

4.2.1 Testing H₀₁:

“There is no relationship between keeping a track of project costs and project performance in Bugarama Rice Project.”

Table 2: Shows Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.906 ^a	.821	.818	.43740

a. Predictors: (Constant), Keeping a Track of Project Costs (X₁)

Table 2 demonstrates the value of R-square in this study is 0.821 (82.1%) means that percentage of project performance (dependent variable) is explained by the independent variables (keeping a track of project costs) at 82.1%. This stipulates that the model is very strong, as the independent variable highly explains the dependent variable. The adjusted R-square is used to compensate for additional variable in the model. In this case, the adjusted R-square is .818 (81.8%) for project performance in Bugarama Rice Project in Rwanda.

Table 3: ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	59.633	1	59.633	311.704	.000 ^b
Residual	13.009	68	.191		
Total	72.643	69			

a. Dependent Variable: Performance of Rice Projects

b. Predictors: (Constant), Keeping a Track of Project Costs (X₁)

For instance, from the ANOVA Table 3, *p*-value is 0.000 which is less than the 0.05, set as standard significance levels with fit level of 311.704. This means that null hypothesis stated that there is no relationship between keeping a track of project costs and project performance in Bugarama Rice Project, was rejected and goes by the alternative hypothesis, which states that the independent variable influences project performance in Bugarama Rice Project.

Table.4: Shows the Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
1 (Constant)	.330	.112		2.952	.004	.107	.552
Keeping a Track of Project Costs (X₁)							
Project develop accurate cost estimates	.777	.044	.906	17.655	.000	.689	.864
Collect and share information							
Compare actual costs with budgeted							

a. Dependent Variable: Performance of Rice Projects

$Y_{Pp} = \alpha + \beta_1 X_1 + \epsilon_1$, Y_{Pp} = Dependent variable– Performance of Rice Projects, α = Constant ϵ_1 = Error, β_1 = Beta coefficients, X_1 = Keeping a Track of Project Costs (X₁), $Y_{Pp} = .330 + .777$ (Keeping a Track of Project Costs (X₁)) + .044

Regression equation demonstrates that project performance in Bugarama Rice Project would always depend on a constant factor of .330 irrespective of the existence of other factors. The other variables explain that; any unit increase in keeping a track of project costs would increase project performance by a factor of .777.

4.3 To determine the planning project budget on project performance

This sub section is aiming to make out the reaction of respondents basing on second research objective of the study and then researcher presents the components that provide the factors that determine the planning project budget on project performance in the project as follows:

Table 5: Descriptive Statistics for determine the planning project budget on performance

Planning project budget	SA		A		D		SD		Mean	Std Dev.
	fi	%	fi	%	fi	%	fi	%		
Labor cost of the project is a challenge to project cost control hence poor performance.	47	67	10	14	02	3	11	16	1.7000	1.12858
Estimating the material cost of the project leads to performance of the project in terms of efficiency budget cost of work performed	07	10	53	76	06	08	04	06	2.1000	.64072
Cost of the project office results to efficiency project budget cost in the managing project	03	04	10	14	32	46	25	36	3.1500	.81273
Performance is due to committed to the operation of the project cost control such as effective cost management, planning the project budget and additional steps for projects	49	70	04	05	07	10	11	15	1.7000	1.17429
Overall Mean									2.1625	0.93908

Source: Survey Data, September, (2022)

The results in Table 5 showed that that 81% of the respondents agreed that labour cost of the project is a challenge to project cost control hence poor performance and 19% of respondents disagree with statement. This implies that there is a challenge for labour cost in the project. The results showed that 86% of the respondents agreed that estimating the material cost of the project leads to performance of the project in terms of efficiency budget cost of work performed. Findings showed that 86% of the respondents disagreed that cost of the project office doesn't result to efficiency project budget cost in the managing project. 75% of the respondents agreed that performance is due to committed to the operation of the project cost control such as effective cost management, planning the project budget and additional steps for projects.

Basing on the response, only one question was disagreed hence significant effect. This signifies that planning project budget affects performance Bugarama Rice projects in Rwanda. In light of research findings from planning project budget has presented overall average of ($x = 2.1625$ and Std Dev = 0.93908) in influencing the project performance; this means there is moderate mean and evidence of the existence of the fact and homogeneity of responses.

This finding agrees with MelekEker (2017), "the impact of budget participation on managerial performance via organizational commitment". Unpublished PhD Thesis Akdeniz University

Faculty of Economics. Planning project budget is usually developed in the areas of project cost systems.

The researcher also conducted in-depth group interviews with Bugarama Rice projects management in regard to how planning project budget affected the project performance. The items of interview discussion focused on the planning project budget as the foregoing analysis shows. In regard to discussion with management, the interview showed that planning project budget has improved project performance. It was argued that information contained through discussion with respondents in terms of expertise and knowledge of employees and management, desirable time for effectiveness in project and time leads to effectiveness in the project. The source of knowledge about the project’s planning project budget can be leveraged to improve project performance. This finding is also consistent with the questionnaire survey item 3 where respondents noted estimating planning material cost of the project leads to performance hence expertise and knowledge about material cost is critical for the performance of Project. Basing on the discussion with management revealed that planning project budget is vital in project performance in terms of time and minimum cost and quality work and expected period scope of project.

4.4 Effect of Planning Project Budget on Project Performance

Linear regression analysis was conducted to investigate the statistical role of planning project budget on project performance in Rwanda using the model below:

$$Y_{PP} = \alpha + \beta_2 X_2 + \varepsilon_2$$

4.4.1 Testing H₀₂:

“There is no relationship between planning project budget and project performance in Bugarama Rice Project”

Table 6: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.915 ^a	.837	.835	.41673

a. Predictors: (Constant), Planning the Project Budget for project (X₂)

Table 6 illustrates the value of R-square in this study is .837 (83.7%) signifies that the fraction of project performance (dependent variable) is explained by the independent variables (Planning the Project Budget for project) at 83.7%. This demonstrates that the model is very high, as the independent variable strongly explained in dependent variable. The adjusted R-square is used for extra variable in the model. In this case, the adjusted R-square is 83.5% for project performance in Bugarama Rice Project in Rwanda.

Table 7: ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	60.834	1	60.834	350.290	.000 ^b
	Residual	11.809	68	.174		
	Total	72.643	69			

a. Dependent Variable: Performance of Rice Projects

b. Predictors: (Constant), Planning the Project Budget for project (X₂)

According to ANOVA Table 8, *p-value* is 0.000 which is less than the 0.05, set as standard significance levels with level of fit equals 350.290. This signifies that reject null hypothesis and accept the alternative hypothesis. Therefore, there is statistical significant relationship between planning the project budget for project and project performance thus planning the project budget in Bugarama Rice Project is done by top management has an influence on project performance.

Table 8: Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
1 (Constant)	.265	.109		2.444	.017	.049	.482
Planning the Project Budget for Project (X₂)							
Labor cost	.832	.044	.915	18.716	.000	.743	.920
Estimate material cost							
Cost of the project							

a. Dependent Variable: Performance of Rice Projects

$$Y_{pp} = \alpha + \beta_2 X_2 + \epsilon_2, Y_{pp} = \text{Performance of Rice Projects}, \alpha = \text{Constant}, \epsilon_2 = \text{Error Term}, \beta_2 = \text{Beta coefficients}, X_2 = \text{Planning the Project Budget for Project (X}_2\text{)}, Y_{pp} = .265 + .832 (\text{Planning the Project Budget for Project (X}_2\text{)}) + .093$$

The regression equation demonstrations that project performance in Bugarama Rice Project would always depend on a constant factor of .265 irrespective of the presence of other factors. The other variables explain that; any unit change in planning the project budget would increase project performance by a factor of .832.

4.4.3 To assess the managing project expenses on project performance

This sub section is aiming to make out the reaction of respondents basing on third research objective of the study and then researcher presents the components that provide the factors that assess the managing project expenses in the project as follows:

Table 9: Descriptive statistics for assess the managing project expenses on performance

Leadership Style	SA		A		D		SD		Mean	Std Dev.
	fi	%	fi	%	fi	%	fi	%		
Project manager ensure compliance with the budget for continually compare the actual expenses incurred with the predicted ones throughout the project's life cycle	16	23	46	65	03	04	06	08	2.0500	.82558
Review of budget reduces the difficulties of the project such as unmanaged contracts	41	58	07	14	11	16	08	12	1.6500	.93330
Provision of project financial reports during of project process minimizes challenges of the project cost control.	10	14	04	06	24	34	32	46	3.1000	1.07115
Reducing project overspending leads to better performance of project cost control.	13	18	44	63	08	12	05	07	2.0500	.68633
Overall Mean									2.2125	0.87909

Source: Survey Data, September, (2022)

The research results in Table 10 showed that 88% of the respondents agreed that project manager ensure compliance with the budget for continually compare the actual expenses incurred with the predicted ones throughout the project's life cycle and 12% of the respondents disagreed with statement. 71% of the respondents agreed that review of budget reduces the difficulties of the project such as unmanaged contracts. The survey shows that 79% of the respondents disagreed that provision of project financial reports during of project process doesn't minimize challenges of the project cost control. Findings shows that 78% of the respondents agreed that reducing project overspending leads to better performance of project cost control.

Basing on the feedback from respondents, only one question was disagreed that is insignificant. This signifies that managing project expenses affects project performance in Bugarama Rice projects in Rwanda. According to survey results from managing project expenses has presented overall average of ($x = 2.2125$ and $Std\ Dev = 0.87909$) in influencing the project performance; that means there is moderate mean and evidence of the existence of the fact and homogeneity of responses. This finding compares well with the position taken by Doye, D and Sahs, R. (2015). Using Enterprise Budgets in Farm Financial Planning. Extension. Hinman hence project cost management for different project objectives. Managing project expenses is a very vital practice in project for better project cost.

The researcher also conducted in-depth group interviews with Bugarama Rice projects management in regard to how managing project expenses affected the project performance. The items of interview discussion focused on the managing project expenses as the foregoing analysis shows. Regarding on interviewing with project management in the interview respondents said that proper managing project expenses in terms of review the budget, assessing project financial report and reduce project overspending. This has assisted in performance of project in terms of time and minimum cost and quality work and expected period scope. One respondent reaffirmed by arguing that "managing project expenses over

time leads to effective performance of Bugarama Rice projects. This finding is confirmed by the questionnaire survey item 4 where respondents indicated that reducing project overspending leads to better performance of project cost control.

4.4 Effect of Managing Project Expenses on Project Performance

Linear regression analysis was conducted to investigate the statistical effect of managing project expenses on project performance in Rwanda using the model below:

$$Y_{PP} = \alpha + \beta_3 X_3 + \varepsilon_3$$

4.4.1 Testing H₀₃:

“There is no relationship between managing project expenses and project performance in Bugarama Rice Project.”

Table 10: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.931 ^a	.867	.865	.37655

a. Predictors: (Constant), Managing Project Expenses (X₃)

Table 10 illustrates the value of R-square in this study is .867 (86.7%) signifies that the part of project performance (dependent variable) is explained by the independent variables (Managing project expenses) at 86.7%. This signifies that the model is very high, as the independent variable strongly explains the dependent variable. The adjusted R-square is used for added variable in the model. In this case, the adjusted R-square is 86.5% for project performance in Bugarama Rice Project.

Table 11: ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	63.001	1	63.001	444.340	.000 ^b
	Residual	9.641	68	.142		
	Total	72.643	69			

a. Dependent Variable: Performance of Rice Projects

b. Predictors: (Constant), Managing Project Expenses (X₃)

The ANOVA Table 11, *p*-value is 0.000 which is less than the 0.05, set as standard significance levels with fit level of 444.340. This means that null hypothesis states that there is no relationship between managing project expenses and project performance in Bugarama Rice Project, was rejected and goes by the alternative hypothesis, which states that the independent variable influences project performance in Bugarama Rice Project.

Table 12: Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
1 (Constant)	-.060	.105		.573	.568	-.150	.271
Managing Project Expenses (X₃)							
Review the budget	.891	.042	.931	21.079	.000	.807	.975
Assessing project financial report							
Reduce project overspending							

a. Dependent Variable: Performance of Rice Projects

$Y_{pp} = \alpha + \beta_3 X_3 + \epsilon_3$, Y_{pp} = Project Implementation, α = Constant, ϵ_3 = Error Term, B_3 = Beta coefficients, X_3 = Managing Project Expenses (X₃), $Y_{pp} = -.060 + .891$ (Managing Project Expenses (X₃)) + .042

The regression equation demonstrates that performance of rice projects in Bugarama Rice Project would always depend on a constant factor of -.060 regardless of the existence of other factors. The other variables explain that; any unit change in managing project expenses would increase project performance in Bugarama Rice Project by a factor of .891. This would require more effort due to $\beta_1 = -.060$.

4.5 To Examine Level of Performance in Project

This sub section is aiming to make out the reaction of respondents basing on dependent variable of the study and then researcher presents the components that provide the factors that examine the level of performance in project as follows:

Table 13: Descriptive Statistics for Level of Performance in the Project

Project Implementation	SA		A		D		SD		Mean	Std Dev.
	fi	%	fi	%	fi	%	fi	%		
Effective cost work performed such cost of the activity and monitor activity cost of project is achieved though project cost control	17	24	37	53	07	10	10	14	2.1500	.98809
Efficiency budget cost of work performed such as cost of estimated of activity and duration of project is due to project cost control.	32	45	20	28	06	08	13	19	2.0000	1.16980
Overall Mean									2.0750	1.078945

Source: Survey Data, September, (2022)

The research results in Table 13 showed that 76% of the majority respondents agreed that effective cost work performed such cost of the activity and monitor activity cost of project is achieved though project cost control. 73% of the majority of respondents agreed that

efficiency budget cost of work performed such as cost of estimated of activity and duration of project is due to project cost control.

Basing on feedback of respondents, all agreed that there is level of performance in project. This signifies that project cost control system has positive effect on level of project performance in terms of time and minimum cost and quality work and expected period scope. In light to research survey on project performance shows overall average of ($x = 2.0750$ and $SD = 1.07845$) in the project; that means there is moderate mean an indication of the existence of the fact and heterogeneity of responses.

In interview with project management, further revealed that examining project cost control system is the power to influence and potential impact was advantageous towards project performance. Two respondents noted that “project budget is more carefully estimated and actual expenditure on the project more carefully monitored hence quality delivery towards the project goals and objectives”. This was also supported by findings from the questionnaire survey item 2 where respondents gave credit to this argument. It is therefore logical to argue that evaluating the influence and potential impact of project cost control system to project scope and time is also vital for arranged response.

4.5 Correlation Matrix Analysis test

4.5.1 Correlation Matrix Results

A correlation matrix is a table showing correlation coefficients between variables. Each cell in the table shows the correlation between two variables. Each random variable (M) in the table is correlated with each of the other values in the table (N). Findings show correlation matrix results in table 14.

Table 14: Shows Correlation Matrix

	Keeping a Track of Project Costs (X_1)	Planning the Project Budget for project (X_2)	Managing Project Expenses (X_3)	Performance of Rice Projects
Keeping a Track of Project Costs (X_1) Pearson Correlation Sig. (2-tailed) N	1 70			
Planning the Project Budget for project (X_2) Pearson Correlation Sig. (2-tailed) N	.966** .000 70	1 70		
Managing Project Expenses (X_3) Pearson Correlation Sig. (2-tailed) N	.933** .000 70	.957** .000 70	1 70	
Performance of Rice Projects Pearson Correlation Sig. (2-tailed) N	.906** .000 70	.915** .000 70	.931** .000 70	1 70

Source: Survey Data, September, (2022)

In this case, correlation matrix Table 14, the outcomes show that there is a very high correlation between keeping a track of project costs (X_1) and project performance as Pearson correlation is .906** with the *p-value* of 0.000, which is less than standard significance levels of 0.05. This signifies that, out of the considered other factors influencing performance of rice projects in Rwanda, only keeping a track of project costs has statistical significant and high positive effect on the project performance in Bugarama Rice Project.

The survey results indicated that there is very strong correlation between planning the project budget for project (X_2) and project performance in Bugarama Rice Project as Pearson correlation is .915**. The *p-value* is 0.000, which is less than standard significance levels of 0.05. This specifies that, when ignore other factors affecting project performance in Rwanda, only planning the project budget has high statistical significant effect on project performance in Bugarama Rice Project.

Basing on correlation matrix table 15, the survey results demonstrates that there is very strong correlation between managing project expenses and project performance in Bugarama Rice Project as Pearson correlation is .931**. The *p-value* is 0.000, which is less than standard significance levels of 0.05. This specifies that, without other factors affecting project performance in Rwanda, only managing project expenses has statistical significant relationship with project performance in Bugarama Rice Project. This generally implies project cost control system has high positive significant effect on the project performance.

4.6. Joint Model: Project Cost Control System and Performance of Rice Projects

Multiple regression analysis was conducted to investigate the statistical effect of project cost control system and performance of rice projects in Rwanda using the model below:

$$Y_{pp} = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3$$

The independent variables (X_1 - X_3) under consideration included keeping a track of project costs, planning project budget and managing project expenses.

4.6.1 Testing H_0 :

“There is no significant influence of project cost control system on performance of Bugarama Rice Project in Rwanda.”

Table 15: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.937 ^a	.878	.873	.36606

a. Predictors: (Constant), Managing Project Expenses (X_3), Keeping a Track of Project Costs (X_1), Planning the Project Budget for project (X_2)

Table 15 shows the value of R-square in this study is .878 means that the fraction of project performance (dependent variable) is explained by the independent variables (project cost control system) at 87.8%. This indicates that the model is very strong, as the independent variable highly explain the dependent variable. The adjusted R-square is used to compensate for additional variable in the model. In this case, the adjusted R-square is 87.3% for project performance in Bugarama Rice Project in Rwanda.

Table 16: ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	63.799	3	21.266	158.705	.000 ^b
	Residual	8.844	66	.134		
	Total	72.643	69			

a. Dependent Variable: Performance of Rice Projects

b. Predictors: (Constant), Managing Project Expenses (X₃), Keeping a Track of Project Costs (X₁), Planning the Project Budget for project (X₂)

Basing on ANOVA Table 16, *p-value* is 0.000 which is less than the 0.05, set as standard significance levels with fit level of 158.705. This means that null hypothesis stated that there is no significant influence of project cost control system on performance of Bugarama Rice Project in Rwanda, was rejected and goes by the alternative hypothesis, which states that the independent variable influences performance of Bugarama Rice Project in Rwanda in terms of time and minimum cost and quality work and expected period scope.

Table 17: Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
1 (Constant)	.090	.103		.867	.389	-.117	.296
Keeping a Track of Project Costs (X ₁)	.212	.144	.247	1.476	.145	-.075	.498
Planning the Project Budget for project (X ₂)	.065	.188	.071	.344	.732	-.311	.440
Managing Project Expenses (X ₃)	.605	.142	.633	4.267	.000	.322	.888

a. Dependent Variable: Performance of Rice Projects

$$Y_{PI} = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3$$

Y_{PP} = Project Performance, α = Constant, $\epsilon_{(1-3)}$ = Error, $\beta_{(1-3)}$ = Coefficient of the Disbursement, X_1 = Keeping a Track of Project Costs, X_2 = Planning the Project Budget for project, X_3 = Managing Project Expenses, $Y = .090 + .212$ (Keeping a Track of Project Costs) + $.065$ (Planning the Project Budget for project) + $.605$ (Managing Project Expenses) + 0.474

The multiple regression equation demonstrates that performance of rice projects in Rwanda would always depend on a constant factor of .090 regardless of the existence of other factors. The other variables explain that; every unit increase in managing project expenses would increase project implementation by a factor of .605, followed by unit change in keeping a track of project costs by a factor of .212 and lastly planning the project budget for project by .065. This signifies that proper practice of managing project expenses in the project would always increase project performance most.

5.1 Conclusion

In conclusion, putting proper keeping a track of project costs in terms of a project develop accurate cost estimates and realistic project budget that leads to project to minimum cost and establish a system to collect and share information to helped project manager in tracking unnecessary costs rice projects in Rwanda. However, some of respondent disagreed that project manager doesn't compare actual costs with budgeted estimates during project duration but this was insignificant in overall keeping a track of project costs towards project performance.

The research survey concluded signifies that there was statistically significant effect of planning project budget on project performance within minimum time and cost as well as planning project budget on quality work and expected period scope of rice projects in Rwanda. However, minority disagreed with the statements but this did affect that planning project budget that had a positive impact on project performance.

Eventually the research concluded that managing project expenses increased project completion within quality work and expected period scope of rice projects in Rwanda and there was also statistical significant effect of managing project expenses on project minimum cost and time in rice projects Rwanda. In general, managing project expenses improves project performance according to research results.

5.2 Recommendations

The researcher suggested the following recommendations such as management should advise project manager to always compare actual costs with budgeted estimates during project duration for better performance. Management should always be aware of labor cost of the project is a challenge to project cost control and not managed well might lead to poor performance of the project. Management should emphasize on cost of the project office results in relation to efficiency of project budget cost in the managing project in order to prevent future challenges. Management should have a provision of project financial reports during of project process that minimizes challenges of the project cost control during project completion. Management should be aware that managing project expenses vital for the project followed by keeping a track of project costs and lastly planning the project budget for project and this signifies that proper practice of managing project expenses in the project would always increase project performance most.

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